

## **SPECIFICATION**

To All Whom It May Concern:

Be It Known That I, Juan Anguera Font, a citizen of Spain, resident of the City of Barcelona, whose full post office address is Buenos Aires, 28 - 5<sup>o</sup> 4<sup>a</sup>, 08036 Barcelona Spain, have invented certain new and useful improvements in

**TWO-WAY TRAP**

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### **BACKGROUND OF THE INVENTION**

This invention relates generally to drainage systems and particularly to  
5 drain traps in such systems.

The state-of-the-art known by the applicant refers to general drain traps in  
buildings. These are installed before the connection to the sewer network, to  
prevent effluences and foul odors from the sewer from spreading through the  
building drainage network to the interior of buildings and through the drains of  
10 terraces and patios. The problem posed in this case is that it is impossible to  
anticipate when blockage will occur, which is generally due to the discharge of  
solid materials or to accumulation of deposits that are not carried away by the  
water, or to solidification of detergent scum that accumulates in the general trap.

Referring to Figs. 1-4, the prior art drainage system comprises an inlet  
15 pipe 2 and an outlet pipe 4. Disposed between the inlet pipe 2 and the outlet  
pipe 4 is a general trap section 6. Manholes 8, 10 are disposed within the inlet  
pipe 2 and outlet pipe 4 respectively. In use, the general trap section 6 fills with  
water to the level of line 12 and prevents the smell of sewage from passing from  
the outlet pipe 4 to the input pipe 2. Referring to Fig. 4, when the trap 6  
20 becomes filled with a blockage A or a blockage B, the sewer becomes clogged  
and no water flows through the inlet pipe 2 to the outlet pipe 4. When the water  
level falls below that shown in Fig. 4, the trap fails to prevent the smell of sewage  
passing from the outlet pipe 4 to the inlet pipe 2.

## SUMMARY OF THE INVENTION

The present invention provides a two-way trap comprising an inlet pipe and an outlet pipe. A general trap section is attached to and disposed between the inlet pipe and outlet pipe such that when filled with water to an equilibrium water level equal to the lowest point of the outlet pipe, air does not freely communicate between the inlet pipe and the outlet pipe. An auxiliary trap section is attached to either the inlet pipe or trap section at a point above the equilibrium water level at a first end and attached to the trap section at a point below the equilibrium water level at a second end, such that if the general trap section became blocked water would flow through the auxiliary trap section yet air would not freely communicate between the inlet pipe and the outlet pipe.

## DESCRIPTION OF THE DRAWINGS

- Fig. 1 is a side elevational view of a prior art trap;
- Fig. 2 is a top plan view of said prior art trap;
- Fig. 3 is a side elevational section view of said prior art trap showing the water level therein;
- Fig. 4 is a side elevational section view of said prior art trap showing blockages therein;
- Fig. 5 is a side elevational view of an improved two-way trap according to an embodiment of the present invention;
- Fig. 6 is a top plan view of the two-way trap of Fig. 5;

Fig. 7 is a cross section view of the two way trap of Fig. 5 taken along line 7-7 of Fig. 5; and

Fig. 8 is a side elevational section view of the two-way trap of Fig. 5.

## 5 DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

While the invention is susceptible of embodiment in many different forms, there is described in detail preferred embodiments of the invention. It is to be understood that the present disclosure is to be considered only as an example of the principles of the invention. This disclosure is not intended to limit the broad  
10 aspect of the invention to the illustrated embodiments. The scope of protection should only be limited by the claims.

The invention consists of the possibility of preventing and therefore providing a solution for blockages that occur in general building traps, thus precluding the difficulties and troubles resulting from this type of obstruction,  
15 which basically involves water from the sewer backing up until it runs out through the drains of ground floors, patios, terraces and plumbing fixtures, producing a strong stench and in many cases causing the building's main sewer to break, as it is not prepared to support the weight of so much water. All this means that, in most cases, ground floors and basements are flooded with, we repeat, a strong  
20 stench.

After streamlining the general trap in a more functional way, the invention basically consists of connecting to this general trap a new smaller diameter pipe, so that it connects the water inlet part above the waterline within elevation (M) (figure 8) to the outlet part at the opposite end of the trap but below the waterline

at an elevation (N), thus forming a new two-way drain trap that fulfils the previous functions, i.e. preventing foul odors and effluents from the sewer.

This new pipe or auxiliary trap will only start working (by virtue of the position of its connections) when the general trap is totally or partially obstructed.

5 In these cases, the water, by the effect of gravity, will be detoured to this new by-pass pipe without interrupting the building's drainage function and thus avoiding the consequences described above. It is also possible to connect an optic or acoustic alarm that indicates when water is flowing through the auxiliary pipe, which will be a warning that the general trap must be cleaned because it is  
10 blocked to a greater or lesser extent. Nevertheless, if this latter circumstance should occur, and in spite of the blockage, the trap would continue to work up until the moment when the auxiliary pipe or trap is closed off.

Manually constructing the two-way trap by using PVC pressure pipe, in straight or bent sections and cut to the desired size and shape, forming the  
15 openings and coupling them to each other, and welding these joints with a hot air jet and virgin PVC rod, which provides good watertightness and resistance (the use of bent or special pieces is usually prohibitive because of the high cost for large diameters). All measurements, diameters, connection points and angle irons shall be variable, to adapt to the siting needs of each building, thus allowing  
20 for serial and more customized fabrication.

The purpose of the invention is to prevent the collapse of a building's drainage networks as a result of obstruction of the general trap. It involves functionally streamlining the trap by providing it with a new drainage channel in

order to prevent these collapses and the serious consequences resulting from them.

This new pipe or two-way trap is characterized by the fact that it only starts working when the general trap is obstructed, as it has a new auxiliary trap that acts as a spillway or overflow channel for the main sewer since the water is detoured by gravity to the end section or outlet of the trap, away from the blocked zone, and that this circumstance can be taken advantage of to install an optic or acoustic alarm system in this pipe that indicates when this new channel starts working, which will be a warning that a total or partial obstruction of the general trap has occurred.

Figs. 5 and 6 show an elevation and plan drawing with the coupling of the two-way pipe, although it is in Fig. 8 where its operation can best be appreciated. When the trap by blockage in zone A (solidified scum) or in zone B (solid elements that are not carried away) becomes totally or partially obstructed, the water will flow upward by gravity until it reaches the two-way trap located at a distance (M), and it will flow out at the opposite end of the trap at a distance (N) from the waterline, as indicated by the dashed line for the water route. At its outlet, through the effect of turbulences that can occur at this point, especially on rainy days when there is a larger makeup flow, it can help to clear the obstruction by removing the solid parts that are not compacted.

Figs. 5-8 show the structural arrangement of parts of a combination drain trap 20 according to the present invention. The drain trap 20 comprises an inlet pipe 22, an outlet pipe 24 and a trap section 26 disposed therebetween. When water is flowing from the inlet pipe 22 to the outlet pipe 24 through the trap

section 26, the water level raises to a line 30, the low level of the outlet pipe 24.

The water level is such that air will not flow from the outlet pipe 24 to the inlet pipe 22 through the trap section 26, or vice versa. Furthermore, the drain trap 20 further comprises a secondary or auxiliary trap 28 connected at a first end to

5 either the inlet pipe 22 or the general trap section 26 at a location or a point above the line 30 and at a second end to the general trap section 26 at a point below the line 30. In this manner, when the general trap section 26 is not blocked by a blockage, water flows through the trap section 26 and the water level is such that air will not flow between the inlet pipe 22 and the outlet pipe 24, 10 or vice versa, through the trap section 26 or the auxiliary trap 28. When a blockage A or B occurs in the trap section 26, water flows from the inlet pipe 22 through the secondary or auxiliary trap 28 around the blockage to the outlet pipe 24. When this occurs, the water level remains at line 30 and air will not flow between the inlet pipe 22 and the outlet pipe 24 due to the auxiliary trap 28 15 connecting to the trap section below the water line 30. In this way, the foul odors and effluents are avoided. In the embodiment shown, access manholes 32 and 34 are provided in the inlet pipe 22 and outlet pipe 24. In addition, a manhole 36 is provided in the auxiliary trap 28 for improved blockage access.

While the specific embodiments have been described, numerous 20 modifications come to mind without significantly departing from the spirit of the invention, and the scope of protection should only be limited by the scope of the accompanying claims.